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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/005,592	10/26/2001	George Gammel	V0077/7149 WRM/RHW	8123
7590	03/05/2004			
Gary L. Loser Varian Semiconductor Equipment Associates, Inc. 35 Dory Road Gloucester, MA 01930			EXAMINER BERMAN, JACK I	
			ART UNIT 2881	PAPER NUMBER

DATE MAILED: 03/05/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/005,592	Applicant(s) GAMMEL ET AL.	
	Examiner Jack I. Berman	Art Unit 2881	<i>AW</i>

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 October 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/19/03, 10/1/03</u> . | 6) <input type="checkbox"/> Other: ____. |

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Claim 20 is objected to because of the following informalities: Claim 20 recites the limitation "the acceleration/deceleration column" in lines 1-2. There is insufficient antecedent basis for this limitation in the claim. Appropriate correction is required.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 4, 5, 10, 16, 17, 19, 20, 22, 25, and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Vella. Vella discloses an ion implantation system (see lines 30-32 in column 3) comprising: an ion beam source (24) capable of generating an ion beam; an extraction electrode (top plate 28 that comprises an extraction aperture 18 through which ions drift to enter an acceleration region 38 that inherently requires top plate 28 to function as an extraction electrode) associated with the ion beam source and positioned so that the ion beam passes therethrough; and a gas supply (transfer gas feed 42) constructed and arranged to introduce gas into a region (charge transfer region 32) defined, at least in part, by the electrode (top plate 28) that is shaped to confine the gas introduced into the region. The extraction aperture (18) of the electrode (28) includes an inwardly tapering end. The Vella system further comprises a dopant gas supply connected to the ion beam source by a plasma source gas feed (40). In the embodiment illustrated in Figure 3, Vella discloses an embodiment of an ion source for an ion implantation system wherein a target gas is introduced into a region (52) bounded by an electrode (54) that inherently defines at least part of a housing for the gas proximate to the ion

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source (10). Because this housing is proximate to the ion source, it is inherently upstream of the acceleration/deceleration column required by all ion implantation systems to direct an ion beam from a source to a target. Vella also discloses a method for using the apparatus to generate an ion beam.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3, 8, 9, 11, 12, 18, 26, 27, 28, 30, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vella. Since it is only the potential difference between adjacent electrodes that determines the acceleration of ions in the space between the electrodes, not the potential applied to any single electrode, the potential applied to the electrode that defines the region that receives the gas (or even grounding it) would have been an obvious matter of routine experimentation (so long as a different potential was applied to an adjacent electrode). The actual acceleration voltage used would have been an obvious design choice based upon the intended use

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of the ion beam. Vella does not specify the location of the inlet (transfer gas feed 42) through which the gas is introduced into the region (charge transfer region 32), but this would have been a matter of routine experimentation so it would have been obvious to a person having ordinary skill in the art to locate the inlet in the electrode. It would also have been obvious to a person having ordinary skill in the art to introduce the gas into the region in an upstream direction so that excess gas could be removed by vacuum pumps near the ion source and not contaminate the high vacuum required in the beam line downstream of the ion source. It would further have been obvious to a person having ordinary skill in the art that a flow controlling device would have to be used to control the flow of gas from the gas supply to the region. If such a device were not provided, the high pressure caused by the gas would prevent the ion source from functioning. The actual flow rate would have been a matter for routine experimentation.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vella in view of Aitken. At lines 29-35 in column 25, Aitken teaches to secure an extraction electrode (237) and other related electrodes (236, 238) to a manipulator assembly (adjusting arrangement 235B) so that the alignment of these electrodes with respect to an adjacent ion source can be adjustment. It would have been obvious to a person having ordinary skill in the art to secure the electrodes in the Vella system to a similar manipulator for the same purpose.

Claims 13-15, 21, 23, 24, and 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Vella in view of Sinclair et al. While Vella uses charge exchange to produce ions of a second species after ions of a first species are introduced into a charge exchange region, Sinclair et al. teaches, at lines 15-17 in column 2, that it is known in the art to introduce a neutral gas (nitrogen, argon, xenon, or neon) into the beamline of an ion implantation system so as to neutralize the space charge in the ion beam. Even though the known scheme described by

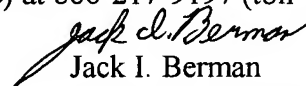
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Sinclair et al. introduces the gas into the beamline at the location of the mass analysis magnet, it would have been obvious to a person having ordinary skill in the art to neutralize the space charge of the beam as close to the ion source as possible in order to minimize the amount of beam blow-up. It would therefore have been obvious to a person having ordinary skill in the art to use Vella's system to introduce the neutral gas described by Sinclair et al. into Vella's charge transfer region in order to achieve the charge neutralization described by Sinclair et al. immediately adjacent to the ion source.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jack I. Berman whose telephone number is (571) 272-2468. The examiner can normally be reached on M-F (8:30-6:00) with every second Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John R. Lee can be reached on (571) 272-2477. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jack I. Berman
Primary Examiner
Art Unit 2881

JB
March 1, 2004